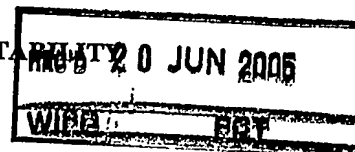


PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference DNT-6 PCT	FOR FURTHER ACTION		See Form PCT/IPEA/416																								
International application No. PCT/US04/29384	International filing date (day/month/year) 10 September 2004 (10.09.2004)	Priority date (day/month/year) 12 September 2003 (12.09.2003)																									
International Patent Classification (IPC) or national classification and IPC IPC(7): C07C 381/00, 233/00; C08G 69/44, 73/06 and US Cl.: 528/288,289,423; 564/192,193; 252/401																											
Applicant DENDRITIC NANOTECHNOLOGIES, INC																											
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of ___ sheets, as follows:</p> <div style="margin-left: 40px;"> <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. </div> <p style="margin-left: 20px;">b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 20%;">Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>				<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand 11 April 2005 (11.04.2005)		Date of completion of this report 26 May 2005 (26.05.2005)																									
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230		Authorized officer Tatyana Zalukaeva Telephone No. (571) 272-1700																									

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US04/29384

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

☒ the international application as originally filed/furnished

☒ the description:

pages 1-6 as originally filed/furnished

pages* NONE received by this Authority on _____

pages* NONE received by this Authority on _____

☒ the claims:

pages 7-9 as originally filed/furnished

pages* NONE as amended (together with any statement) under Article 19

pages* NONE received by this Authority on _____

pages* NONE received by this Authority on _____

☒ the drawings:

pages 1/5-5/5 as originally filed/furnished

pages* NONE received by this Authority on _____

pages* NONE received by this Authority on _____

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to the sequence listing (specify): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to the sequence listing (specify): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."
Form PCT/IPEA/409 (Box No. I) (January 2004)

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US04/29384

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Claims NONE

YES

Claims 1-6

NO

Inventive Step (IS)

Claims NONE

YES

Claims 1-6

NO

Industrial Applicability (IA)

Claims 1-6

YES

Claims NONE

NO

2. Citations and Explanations (Rule 70.7)

Claims 1-6 lack novelty under PCT Article 33(2) as being anticipated by MIGDAL (U.S. 4,938,885 A).

Migdal discloses the product produced by first reacting an alkyl acrylate with an amine to produce an intermediate product, a first generation polyamine ester dendrimer which is then treated with an amine to produce a first generation polyamidoamine dendrimer which is then reacted with an acrylate to produce a second generation polyamidoamine ester dendrimer which with an amine is converted to a second generation polyamidoamine dendrimer which is then reacted with a polyisobutenyl succinic acid anhydride to produce the reactant product a polyisobutenyl succinimide-polyamidoamine dendrimer polymer (abstract). For specific reactions see reaction scheme in col.3 and 4. Preparation of first generation polyamine ester dendrimer is discussed in Example 1, col.6. Methyl acrylate (284 g, 3.29 moles) was added to a two-liter, 3-neck flask equipped with mechanical stirrer, condenser, thermometer, and thermocouple. An addition funnel was charged with methanol (1 liter) and tris-(2-aminoethyl)amine (73 g, 0.50 moles). The contents of the addition funnel were added dropwise with stirring over 6 hours. The mixture was allowed to stand at room temperature for 48 hours at which point excess methyl acrylate and methanol were removed by vacuum distillation (4 mm Hg at 50 C.). This yielded 330 g for a 99% yield. Example 3 in col.7 discusses the production of a second generation dendrimer. With specific regard to claim 3, MIGDAL discloses the use of diethylene triamine and its salts as an amine to react with acrylate ester (see, for example, claim 6 in col.13, 14.

Claims 1,2,4,5 lack novelty under PCT Article 33(2) as being anticipated by KRAUSE et al (U.S. 5,593,660).

KRAUSE discloses cascade polymers (abstract). The method of the instant claim 1 is described in EXample 1(a) in col.1314.69 g (0.100 mol) of tris-(2-aminoethyl)-amine, dissolved in 20 ml of methanol, is instilled in 103.3 g (1.20 mol) of methyl acrylate with stirring at 20.degree. C. The batch is stirred under argon atmosphere for 5 days at room temperature and for 2 days at 50.degree. C. Then, it is concentrated by evaporation in a vacuum and excess methyl acrylate is removed by azeotropic distillation with toluene. The residue is taken up in 150 ml of methanol and 30 ml of diethyl ether, absorptively precipitated with 150 ml of hexane and, after separation of the hexane phase, concentrated by evaporation in a vacuum. The product is obtained as yellowish liquid, which is further reacted without purification. The process for making dendrimers of several generations is described in KRAUSE in Examples 1(b)-1(g) in col.13, 14.

Claims 1-6 lack novelty under PCT Article 33(2) as being anticipated by PLATZEK et al (U.S. 6,299,859).

PLATZEK discloses cascade polymers (abstract), wherein Example 6(a) reads on the preparation of monomers of the instant claims 1 and 4. Cascade or dendrimer polymers are described in Examples 6(b)-6(f).

Claims 1-6 meet the criteria set out in PCT Article 33(4), and thus criteria of industrial applicability because the subject matter claimed can be made or used in coating industry.

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US04/29384

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim I is objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because claim 1 is indefinite for the following reason(s): In the claimed process the temperature range is defined as 0-200°C, and at the same time recites that the reaction is performed at room temperature. It is not clear which of the limitations governs the instant claim.